REMARKS

Claims 1-9 are pending in the present application. In the above amendments, claims 1-9 have been amended and new claims 10-25 have been added. Therefore, after entry of the above amendments, claims 1-25 will be pending in this application. Applicants believe that the present application is now in condition for allowance, which prompt and favorable action is respectfully requested.

Claim Rejections – 35 USC § 103

Claims 1-6 and 8-9 are rejected under 35 USC § 103(a), as being unpatentable over Lee *et al.* (US 2005/007348 A1) in view of Finke-Anlauff (U.S. Patent No. 6,850,226). Applicants respectfully traverse this rejection, because cited primary reference US 2005/007348 A1 does not qualify as a prior art for the instant application, as described in details in the accompanying Affidavit under CFR 1.131 from each of the inventors and the patent agent who prepared the instant application. Therefore, Applicants respectfully request the Examiner to remove the reference and withdraw this rejection.

Applicants have amended claims 1-2 and 8 solely for more clearly claiming the subject matter of the present application.

Claim Rejections – 35 USC § 103

Claim 7 is rejected under 35 USC § 103(a), as being unpatentable over Lee *et al.* (US 2005/007348 A1) in view of Finke-Anlauff (U.S. Patent No. 6,850,226), further in view of Pilhlaja (U.S. Patent No. 7,009,599). Applicants respectfully traverse this rejection, because cited primary reference US 2005/007348 A1 does not qualify as prior art for the instant application, as described in details in the accompanying Affidavit under CFR 1.131 from each of the inventors and the patent agent who prepared the instant application. Therefore, Applicants respectfully request the Examiner to withdraw this rejection.

Amendment to the Specification

Applicants have made amendments to the specification as provided in the attached Appendix A (marked-up copy) and Appendix B (clean copy). No new matter is added.

CONCLUSION

In light of the amendments contained herein, Applicants submit that the application is in condition for allowance, for which early action is requested.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

Dated: December 20, 2006   By: /Abdollah Katbab/

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APPENDIX A
MARKED-UP SPECIFICATION

A PORTABLE DEVICE WITH VERSATILE KEYBOARD

BACKGROUND OF THE INVENTION

Field

[0001]   The invention relates to a portable electronic device. More specifically, the invention relates to an electronic device with [[a]] sliding retractable keyboards that expose[[s]] different key arrangements depending on the direction of keyboard deployment and orient[[s]] the display in relation to the direction of keyboard deployment.

Related Art

[0002]   Handheld computers, personal digital assistants (PDA's), cellular telephones, MP3 players and similar devices have several characteristics in common. Generally, these devices are battery powered, provide the user with a means of input and output and are required to be small in size. If the device has a display there is generally only one.

[0003]   Typically the devices are light weight and sized to fit in a pocket. Design restrictions are placed on every component of the device to accomplish the size and weight goals. If a component can be completely eliminated or combined with another component, a large weight and size reduction can be realized.

[0004]   To eliminate the keyboard, PDA's make use of a touch sensitive screen and pen input system. Handwriting recognition software is used to detect and interpret the meaning of pen strokes. PDA's work reasonably well, however, the advantages of the keyboard for speed and accuracy have not been overcome.

[0005]   One prior approach is to carry a separate keyboard and connect it to the device when needed. There are several disadvantages in this arrangement which include the need to purchase a separate keyboard, the possibility of mechanical failure due to the repeated inserting and removing of the keyboard connector and the need to carry the keyboard as an extra component. Another prior approach uses a wireless connection means to overcome the mechanical connection failure possibilities. However the other disadvantages of a separate keyboard still persist.

[0006]   Additional prior approaches have keyboards that retract when not needed and deploy when needed for input. A traditional alpha-numeric arrangement of keys for a keyboard is referred to as a QWERTY keyboard. This keyboard gets its name from the letters of the first six alphabet keys on the top row reading from left to right. While this is one of the most recognized and used keyboard layouts, it imposes restrictions on designers with regard to it dimensions. This traditional keyboard when viewed and used by the user is typically much longer in width than in height. The ratio of this keyboard's dimensions may not be easily adapted to the device as designed.

[0007]   For example, a device is designed primarily for ergonomics and asthetics such as a phone. The device design is such that as viewed by the user, the length dimension is longer than the width dimension and the width dimension is relatively thin. This device's dimensions directly conflict with the dimensions that are used for a QWERTY type keyboard. That is to say that a keyboard that is wider in relation to height (QWERTY) and as large as the device's real estate can provide would have to be stored 90 degrees to the basic form of the device. Or the keyboard would have to fold or twist about hinges to get the keyboard to rotate 90 degrees so that it is positioned appropriately for the user to use when viewing the screen in the customary way.

[0008]   Another traditional keyboard that needs to be described and with which many modern users are familiar is a numeric keyboard typically used with phones. The traditional numeric phone keyboard starts on the top row and reads from left to right. In this way there is typically three rows of numbers that include the numbers 1-9 and a fourth row with the number zero and other function keys. Typically within the constraints of a phone keyboard additional function keys can be provided comprising;

send, receive, voice-mail and others. Even though there is only a small number of keys required to input a phone number, phones have become smaller and more light weight thus imposing increasingly restrictive constraints on phone style keyboard arrangements.

[0009]   Because the device is proportioned based on constraints that are not necessarily adaptable to keyboard designs, designers have struggled with size and relative dimensions of these keyboards. Designers have created different key arrangements to try and present the needed keys in dimensions that fit within the given designed dimensions. Keys in alphabetical order and straight slanted lines have been used. Keys in curved lines have been used. Staggered key arrangements have been used. Keys of various shapes have also been used. The large number of different types of keyboard arrangements presented to the modern user is indicative of the intense struggle by designers to provide the user with a keyboard for inputting information without exceeding the other design restrictions.

[0010]   Commercial success of a portable electronic device depends in part on the number of devices sold. The device must be "pleasing" to the user to attract the user to becoming a consumer and buy the device. Many factors are involved with creating a "pleasing" device. Intuitive use of the device is one of these factors. If a user can use the device without referencing a user's manual then the device is very intuitive and therefore that portion of use is very "pleasing" to the user. One part of creating an intuitive device is providing the user with traditional input interfaces, such as a traditional QWERTY or a traditional phone style keyboard arrangement. In this way the user is presented with an interface to the device that they are already familiar with.

[0011]   Another pleasing aspect of a device is quality. A user or purchaser of a device typically will associate quality with structural integrity and will be drawn to devices that display high quality or high structural integrity. If there is weakness or undesirable flexibility in the structural connection used to connect the keyboard to the device the user will associate that weakness or flexibility with poor quality. Therefore to promote commercial success of a portable device it is also important that the device have high structural integrity at the point of keyboard attachment.

[0012]   Consider now modern hybrid products where a cellular telephone and a PDA are combined into one device. There is the need to provide the user with the ability to use two different keyboard arrangements. To promote commercial success and provide the user with an intuitive device, a traditional QWERTY and phone style keyboard needs to be made available to the user. The keyboards ~~must~~ also deploy in such a way as to promote the feeling of high quality or high structural integrity. Each of these keyboards however in their traditional form imposes dimensional restrictions for the designer to overcome.

SUMMARY

[0013]   According to one aspect of the invention there is provided an apparatus comprising: a display for presenting information to a user; a housing connected to the display for supporting the display; and a keyboard <u>assembly</u> deployable through a sliding connection to the housing, the keyboard <u>assembly</u> deployable in multiple directions, the information presented to the user through the display is oriented based on deployment of the keyboard <u>assembly</u>, direction of deployment of the keyboard <u>assembly</u>, and/<u>or</u> input from an application resident on the device. The application prescribes the orientation of the information presented on the display to the user in relation to the direction of keyboard <u>assembly</u> deployment.

[0014]   According to another aspect of the invention there is provided a method for presenting information on a display to a user of a device. The device has a keyboard <u>assembly</u> deployable through a sliding connection. The keyboard <u>assembly</u> is deployable in multiple directions. The method comprising: orienting information presented on the display with reference to [[,]] deployment of the keyboard <u>assembly</u>, direction of deployment of the keyboard <u>assembly</u>, and/<u>or</u> input from an application resident on the device. The application prescribes the orientation of the information presented on the display to the user in relation to the direction of keyboard <u>assembly</u> deployment.

[0015]   The above and further features of the invention are set forth with particularity in the appended claims and together with advantages thereof will become clearer from consideration of the following detailed description of an exemplary embodiment of the invention given with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]   In the drawings:

[0017]   Figure 1 shows [[is]] a three dimensional drawing of the device;

[0018]   Figure 2 shows [[is]] three drawings of the device with the keyboard assembly stowed, deployed with a QWERTY key arrangement and deployed with traditional phone style key arrangement;

[0019]   Figure 3 shows [[is]] an oblique three dimensional drawing of the device with the keyboard assembly deployed with a QWERTY key arrangement and deployed with a traditional phone style key arrangement;

[0020]   Figure 4 shows the sliding connection points arrangements for the keyboards; and

[0021]   Figure 5 shows in further detail [[a]] sliding connection means.

DETAILED DESCRIPTION

[0022]   Turning now to figure 1 of the accompanying drawings there is shown a portable device with versatile keyboard assembly 100. The device 100 is operable in multiple orientations and multiple modes using multiple applications. The discussion will primarily describe the device 100 as operating as a combination phone and PDA. It will be apparent to those of the appropriate skill in the art that a variety of combinations of applications can be incorporated into one device.

[0023]   The device is especially adaptable for use with BREW [tm] "Binary Runtime Environment for Wireless" enabled applications. BREW is an application execution platform that runs on firmware targeting wireless applications that can be downloaded and executed on portable devices. The user can listen to music, watch videos, send and receive email, play interactive games from their mobile phone. If there is only one display, as is typical, then the multiple applications will be in competition with one another for use of the single display.

[0024]   In Figure 2 of the accompanying drawings there is shown the device 100 with the versatile keyboard assembly deployed in three aspects. When the device 100 is closed as in view A the keyboard assembly is concealed and ~~does not use any surface area of the device 100~~. [[T]] the display 200 remains accessible to the user. When the versatile keyboard assembly is deployed in a lateral direction, as in view B, an area of the keyboard is exposed for use.

[0025]   Designers have this exposed area available for creating a variety of key layouts. In view B a traditional QWERTY key arrangement is shown and usable to input information when the device 100 is being used as a PDA, for example. Mechanical keys are depicted in view B. However those skilled in the art would appreciate that a variety of input techniques are usable. A touch sensitive screen for example can be positioned in this exposed area for inputting information as well as outputting information.

[0026]   When the keyboard assembly is deployed, the device 100 references the application software being used, detects whether the keyboard is deployed and if deployed, the relative direction that it is deployed. The device 100 orients the information presented on the display 200 so that it can be properly viewed by the user while inputting information through the keyboard.

[0027]   Generally the orientation of the Information on the display 200 is described as one of two aspect ratios, landscape or portrait. Landscape is described as when the display's width is greater than the height when properly viewed by the user. Portrait is described as when the display's height is greater than its width when properly viewed

by the user. It is thus assumed that the display 200 has unequal sides and the discussion is referenced to the dimensional relationship of the display 200 as shown in Figures 2 or 3.

[0028]   The keyboard <u>assembly</u> slides in relation to the device 100. This attachment means provides high structural integrity between the keyboard and the display portion of the device 100. High structural integrity is of great importance. A user or purchaser of the device 100, typically will associate quality with structural integrity and will be drawn to devices that display high quality or high structural integrity. The high structural integrity of the sliding keyboard is therefore of great benefit to the commercial success of the device 100.

[0029]   When the keyboard <u>assembly</u> is deployed down as depicted in view C, an alternate area of the keyboard is exposed. The designer can use this alternate area to create an alternate key layout for use with an alternate application. In view C, a traditional phone key arrangement is shown that is used to input information when the device 100 is being used as a phone. Mechanical keys are depicted in view C. However those skilled in the art would appreciate that a variety of input techniques are usable. A touch sensitive screen for example can be positioned in this exposed area for inputting information as well as outputting information.

[0030]   When the phone-style keyboard is deployed, the device 100 references the application software being used, detects whether the keyboard is deployed and if deployed, the relative direction that it is deployed. The device 100 orients the information presented on the display 200 so that it can be properly viewed by the user while inputting information through the keyboard.

[0031]   Since multiple applications may be running at the same time on the device, it is important that the keyboard deployment direction be detected for all directions in relation to all applications. ~~In that the~~ <u>When</u> multiple applications are all competing for time to use the display 200, it could be confusing to the user if information presented on the display 200 is not controlled in relation to the applications running. The information

on the display 200 ~~must then~~ may be oriented in relation to the keyboard with regard to the application being used so that the user has proper viewing.

[0032]   For example, a user is inputting information in PDA mode using the QWERTY keyboard when a message is received for use with the phone mode. The device may prompt[[s]] the user to close the keyboard from PDA mode and deploy the keyboard in phone mode. The user may ~~simply~~ stow[[s]] the keyboard from PDA mode and deploy[[s]] the keyboard into phone mode. The changes in keyboard deployment are detected by the device and the information displayed on the screen is ~~rotated~~ oriented accordingly for proper viewing.

[0033]   In another example, similar to view C the phone style keyboard is deployed. However if a third application has been downloaded to the device that uses the traditional phone keys but the information must be presented on the display 90 degrees to the deployment direction of the phone style keys. The information presented on the display 200 is rotated 90 degrees from the traditional orientation in the direction that the third application commands.

[0034]   In Figure 3 of the accompanying drawings, there is shown alternative three dimensional views of device 100 with the versatile keyboard assembly deployed. View A has the keyboard assembly deployed laterally exposing a traditional QWERTY keyboard. View B has the keyboard assembly deployed down exposing a traditional phone keyboard arrangement. The keyboard assembly is divided into two sections. Section 310 is referred to as the upper portion of the keyboard assembly and section 320 is referred to as the lower portion of the keyboard assembly.

[0035]   The area 350, represents an area where the two deployments of the keyboard overlap in relation to the display portion of the device. Deployment and direction of deployment of the keyboard assembly may be [[is]] sensed in this region. Sensing can be accomplished by various mechanisms.

[0036]   One way of sensing the keyboard movement is by using Hall effect sensors. A Hall effect sensor generates a voltage in relation to the movement of a magnetic field in close proximity to the sensor. The voltage is detected by the device and used as a signal of keyboard deployment. Benefits of using a Hall effect sensor are reliability and no mechanical elements to wear out over time.

[0037]   In one embodiment, ~~For the instant device~~ a magnet is positioned in the upper portion of the keyboard 310 and a Hall effect sensor is positioned in the display portion of the device 300. The display portion of the device comprises the display 200 and a housing to support the display. A Hall effect sensor is also positioned in the lower portion of the keyboard 320. The result is reliable determination of keyboard deployment and direction even after many keyboard deployments.

[0038]   Region 350 may be [[is]] also used for passing through the electrical connections which are made between the display portion of the device and the two portions of the keyboard. There are various ways to make these electrical connections. Generally, a flexible means with hard connections provides reliable electronic communications while allowing relative movement between the various components. The device 100 uses flexible circuit material to make these connection.

[0039]   In Figure 4, there is shown in greater detail the location of the sliding connections for the keyboard. In view A, tracks A1 and A2 represent the locations of the sliding connections made between the display portion of the device 300 and the upper portion of the keyboard 310. The track is connected to the display portion of the device 300 and a carrier (not shown) is connected to the top side of the upper portion of the keyboard 310. In view A, both the upper and lower portions of the keyboard (310, 320) are deployed together which exposes the phone keys to the user.

[0040]   In view B, tracks B1 and B2 represent the locations of the sliding connection made between the upper portion of the keyboard 310 and the lower portion of the keyboard 320. The track is connected to the bottom side of the upper portion of the keyboard 310 and a carrier (not shown) is connected to the top side of the lower portion

MARKED-UP SPECIFICATION

of the keyboard 320. In view B, the lower portion of the keyboard 320 is deployed which exposes the QWERTY keys to the user.

[0041]   In Figure 5 there is shown in greater detail a track and carrier mechanism usable in the device 100. The track 510 is attached to the display portion of the device and the carrier 520 is attached to the top side of the upper portion of the keyboard 320. The track 530 is attached to the bottom side of the upper portion of the keyboard 310 and the carrier 540 is attached to the top side of the lower portion of the keyboard 320. Connecting the carriers to the tracks establishes the sliding connections between the various portions of the device.

[0042]   Turning now to the orientation of the information presented on the display. Multiple applications can be running at the same time in device 100. The orientation of the information presented on the display 200 generally will have a primary aspect ratio in relation to the direction of keyboard deployment. There will be a secondary aspect ratio possible for each keyboard deployment direction. The aspect ratio control comprises user control and the various applications' control. The chart below indicates some of these relationships.

KEYBOARD STATE	ORIENTATION CONTROL	PRIMARY ASPECT RATIO	SECONDARY ASPECT RATIO
CLOSED	APPLICATION or USER	LANDSCAPE or PORTRAIT	
QWERTY	APPLICATION	LANDSCAPE	PORTRAIT
PHONE	APPLICATION	PORTRAIT	LANDSCAPE

[0043]   In the closed state, the information presented on the display 200 is presented in landscape or portrait as prescribed by the user, an application or both. In the QWERTY state the orientation of the information on the display 200 is primarily controlled by an application operable with the QWERTY key arrangement and presented in landscape with portrait as optional. In the phone state the orientation of

information on the display 200 is primarily controlled by an application operable with the phone key arrangement in portrait with landscape as optional.

[0044]   In addition to using the keyboard, the user inputs information into the device in various ways.   To control the orientation of information on the display 200 the user through a mechanical toggle switch located next to the display selects the desired orientation.   The user can provide input to the device through a touch sensitive display screen.   Voice recognition methods are also available to the user for inputting user commands to the device.   Some of these various ways can be used by the various applications to change orientation of the information on the display 200 based on user input.

[0045]   Having thus described the invention by reference to a preferred embodiment it is to be well understood that the embodiment in question is exemplary only and that modifications and variations such as will occur to those possessed of appropriate knowledge and skills may be made without departure from the spirit and scope of the invention as set forth in the appended claims and equivalents thereof.

MARKED-UP SPECIFICATION

CLAIMS

1.　　(Currently Amended)　An apparatus comprising:

a display for presenting information to a user;

a housing connected to the display for supporting the display; and

a keyboard assembly connected ~~deployable~~ through a sliding connection to the

housing, the keyboard assembly deployable in multiple directions, wherein the

information presented to the user through the display is oriented based on:

~~deployment of the keyboard;~~

a direction of deployment of the keyboard assembly; ~~and~~

~~input from an application resident on the device, the application~~

~~prescribes the orientation of the information presented on the display to the user in~~

~~relation to the direction of keyboard deployment.~~

2.　　(Currently Amended)　The apparatus of claim 1, wherein the keyboard assembly

is deployable in a first direction and a second direction.

3.　　(Currently Amended)　The apparatus of claim 2, wherein the first keyboard

deployment direction presents a QWERTY key arrangement and the second keyboard

deployment direction presents a phone style key arrangement.

4.　　(Currently Amended)　The apparatus of claim 2, wherein the device is operable

as a PDA and a phone.

5.　　(Currently Amended)　The apparatus of claim 1, wherein the device is operable

in a wireless environment.

6.   (Currently Amended) The apparatus of claim 1, wherein the sliding connection is a track and carrier type of connection.

7.   (Currently Amended) The apparatus of claim 1, wherein the display is a touch sensitive screen.

8.   (Currently Amended) A method for presenting information on a display to a user of a device, the device having a keyboard <u>assembly</u> deployable through a sliding connection, the keyboard <u>assembly</u> deployable in multiple directions, the method comprising:

   <u>detecting a direction in which the keyboard assembly is deployed; and</u>

   orienting information presented on the display with reference to:

   ~~deployment of the keyboard;~~

   <u>a</u> direction of deployment of the keyboard <u>assembly</u>~~; and~~

   ~~input from an application resident on the device, the application~~

~~prescribes the orientation of the information presented on the display to the user in~~

~~relation to the direction of keyboard deployment.~~

9.   (Currently Amended) The method of claim 8, further comprising:

   orienting information presented on the display with reference to input by the user.

10.   (New) The method of claim 8 further comprising:

   orienting information presented on the display with reference to input from an application resident on the device.

11.   (New) An apparatus comprising:

a display for presenting information to a user;

a housing connected to the display for supporting the display; and

a keyboard assembly connected through a sliding connection to the housing, the

keyboard assembly deployable in multiple directions.

12.   (New) The apparatus of claim 11, wherein the keyboard assembly provides a

first set of key arrangement, when deployed in a first direction, and provides a second

set of key arrangement, when deployed in a second direction.

13.   (New) An apparatus for presenting information on a display to a user of a

device, the device having a keyboard assembly deployable through a sliding

connection, the keyboard assembly deployable in multiple directions, comprising:

means for detecting a direction in which the keyboard assembly is deployed; and

means for orienting information presented on the display with reference to the

direction of deployment of the keyboard assembly.

14.   (New) At least one processor for presenting information on a display to a user

of a device, the device having a keyboard assembly deployable through a sliding

connection, the keyboard assembly deployable in multiple directions, comprising:

means for detecting a direction in which the keyboard assembly is deployed; and

means for orienting information presented on the display with reference to the

direction of deployment of the keyboard assembly.

15.   (New) A computer program product, comprising:

a computer-implemented medium embodying codes, which when executed by at least one processor, presents information on a display to a user of a device, the device having a keyboard assembly deployable through a sliding connection, the keyboard assembly deployable in multiple directions, the codes comprising:

codes for causing the computer to detect a direction in which the keyboard assembly is deployed; and

codes for causing the computer to orient information presented on the display with reference to the direction of deployment of the keyboard assembly.

16.   (New) An electronic device, comprising:
a first module layer movable in a first direction;
a second module layer movably connected relative to the first module layer; and
a third module layer movably connected relative to the second module layer and movable in a second direction.

17.   (New) The device of claim 16, further comprising a display for presenting information to a user.

18.   (New) The device of claim 17, wherein the information is in a first orientation when the first module layer is moved in the first direction relative to the second module layer, and in a second orientation when the third module layer is moved in the second direction relative to the second module layer.

19.   (New) The device of claim 16, wherein the second module layer further comprises a first input mechanism exposable when the first module layer moves in the first direction relative to the second module layer, and wherein the third module layer further comprises a second input mechanism exposable when the third module layer moves in the second direction relative to the second module layer.

20.   (New) The device of claim 19, further comprising a display for presenting information to a user, wherein the information is in a first orientation when the first input mechanism is exposed and in a second orientation when the second input mechanism is exposed.

21.   (New) A portable electronic device, comprising:

a first component layer movable in a first direction;

a second component layer having a first set of functional components, the second component layer movably connected relative to the first component layer such that movement of the first component layer in the first direction exposes the first set of functional components and activates a first operational mode; and

a third component layer having a second set of functional components, the third component layer movably connected to one of the first component layer and the second component layer, the third component layer movable in a second direction relative to the second component layer to expose a second set of functional components and activate a second operational mode.

22.   (New) A method of controlling relative movement between movable layers of an electronic device, comprising:

movably connecting a first module layer to a second module layer having a first functional component such that a relative movement of the first module layer in a first direction exposes the first functional component; and

movably connecting the second module layer to a third module layer having a second functional component such that a relative movement of the third module layer in a second direction exposes the second functional component.

preventing movement of the third module layer in the second direction during movement of the first module layer in the first direction.

23.   (New) The method of claim 22, further comprising preventing movement of the first module layer in the first direction during movement of the third module layer in the second direction.

24.   (New)   A method for providing a versatile user interface for an electronic device, comprising:

exposing a first set of functional components on a second module layer movably connected to a first module layer, where the first set of functional components is associated with a first operational mode of the electronic device; and

exposing a second set of functional components on a third module layer movably connected to the second module layer, where the second set of functional components is associated with a second operational mode of the electronic device.

25.   (New) The method of claim 24, further comprising displaying information in a predetermined orientation depending on an operational mode of the electronic device.

ABSTRACT

An apparatus comprising: a display for presenting information to a user; a housing connected to the display for supporting the display; and a keyboard deployable through a sliding connection to the housing, the keyboard deployable in multiple directions, the information presented to the user through the display is oriented based on deployment of the keyboard, direction of deployment of the keyboard, and input from an application resident on the device. The application prescribes the orientation of the information presented on the display to the user in relation to the direction of keyboard deployment.